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...amount of an **RAR antagonist**. According...for inducing **chondrogenesis** and associated...compnisncy: a **RAR antagonist** and a pharmaceutically...comprising a **RAR antagonist** and a pharmaceutically...for inducing **chondrogenesis** iii vitro...  
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...can initiate **chondrogenesis** and stimulate...administration of a **RAR antagonist** can rescue...comprising a **RAR antagonist** and a pharmaceutically...for inducing **chondrogenesis** in vitro...cell with a **RAR antagonist** in vitro. According...  
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- ☐ 3. [Retinoic Acid Is a Potent Regulator of Growth Plate Chondrogenesis -- De Luca et al. 141 \(1\): 346 -- Endocrinology \[100K\]](#)  
**Francesco De Luca , Jennifer A. Uyeda , / Veronica Mericq , / Edna E. Mancilla , / Jack A. Yanovski , / Kevin M. Barnes , , Jan 2005**  
...regulates growth plate **chondrogenesis**. Consistent with...retinoic acid receptor (**RAR**) **antagonist**. In the absence of...regulates growth plate **chondrogenesis**. We conclude that...RARs inhibitors on **chondrogenesis** To investigate which...193109, a selective **RAR-antagonist**. Cotreatment with...  
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...Receptor Pan-Antagonists for Stimulating **Chondrogenesis** 5 Field of the Invention

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☐ 5. Retinoic acid signalling in the development of branchial arches

**Mark, M. / Ghyselinck, N.B. / Chambon, P.**, *Current Opinion in Genetics & Development*, Oct 2004

...are derived from BA1 ectoderm and mesenchyme, clearly requires RA ( Figure 3 a,b ). Similarly, atavistic modifications of **chondrogenesis** in BA1 of RARalpha-null mutants point to the recruitment of a RA signalling pathway during evolution from reptilian to mammalian...

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☐ 6. Retinoic acid is a potent regulator of growth plate chondrogenesis.

**F De Luca / J A Uyeda / V Mericq / E E Mancilla / J A Yanovski / K M Barnes / M H Zile / J Baron**, *Endocrinology*, Jan 2000

...hypothesized that RA regulates growth plate **chondrogenesis**. Consistent with this hypothesis...reversed by a retinoic acid receptor (**RAR**) **antagonist**. In the absence of exogenous RA, this...negatively regulates growth plate **chondrogenesis**. We conclude that RA, acting through...

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☐ 7. METHOD FOR PREVENTING OR TREATING CARDIAC HYPERTROPHY

**SMITH, Susan, M. / LOUGH, John, W., Jr. / FLENTKE, George, R. / WISCONSIN ALUMNI RESEARCH FOUNDATION**, *PATENT COOPERATION TREATY APPLICATION*, Dec 2005

...receptors (PPARs) alpha, beta, and gamma, directly compete with and overwhelm the retinoid/RAR signaling pathways. Another known **RAR antagonist** is COUP-TF, which has no known ligand. It is known that too little retinoid/RBP could allow other hormones (specifically...

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☐ 8. Regulation of Skeletal Progenitor Differentiation by the BMP and Retinoid Signaling Pathways -- Weston et al. 148 (4): 679 -- ... [149K]

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...animals interferes with **chondrogenesis** and leads to appendicular...formation. Moreover, an **RAR antagonist** accelerates chondroblast...Key Words : retinoic acid, **chondrogenesis**, bone morphogenetic proteins...promote as well as inhibit **chondrogenesis** are important determinants...

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...by an RXR agonist and reduced by an **RAR antagonist**: Dissection of retinoid receptor-induced...tinoyl-β-D-glucuronide and all- trans -retinoic acid on **chondrogenesis** and retinoid metabolism in mouse limb...tinoyl-β-D-glucuronide and all- trans -retinoic acid on **chondrogenesis** and retinoid metabolism in mouse limb...

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129 (19): 4457 -- Development [152K]  
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 The vertebrate head skeleton is derived in part from neural crest cells, which physically interact with head ectoderm, mesoderm and endoderm to shape the pharyngeal arches.  
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- ☐ **12. Regulation of skeletal progenitor differentiation by the BMP and retinoid signaling pathways.**  
**A D Weston / V Rosen / R A Chandraratna / T M Underhill, J Cell Biol, Feb 2000**  
 ...Overexpression of RARalpha in transgenic animals interferes with **chondrogenesis** and leads to appendicular skeletal defects (Cash, D.E...are known stimulators of cartilage formation. Moreover, an **RAR antagonist** accelerates chondroblast differentiation as demonstrated...

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- ☐ **13. RAR $\gamma$ -Mediated Teratogenicity in Mice Is Potentiated by an RXR Agonist and Reduced by an RAR Antagonist: Dissection of...**  
**Elmazar, M.M.A. / Ruhl, R. / Reichert, U. / Shroot, B. / Nau, H., Toxicology and Applied Pharmacology, Sep 1997**  
 ...by an RXR Agonist and Reduced by an **RAR Antagonist: Dissection of Retinoid Receptor-Induced...**Kochhar D. M. Modulation of limb bud **chondrogenesis** by retinoic acid and retinoic acid...gamma -1 oligonucleotide enhances **chondrogenesis** of mouse limb mesenchymal cells in...

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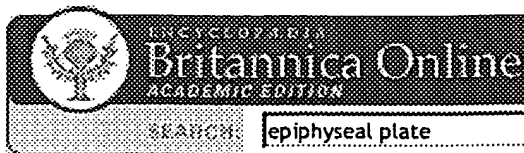
- ☐ **14. Nat'l Academies Press, Scientific Frontiers in Developmental Toxicology and Risk Assessment (2000), Table of Contents [PDF-941K]**  
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 Nat'l Academies Press, Scientific Frontiers in Developmental Toxicology and Risk Assessment (2000), Table of Contents Read more than 3,000 books online FREE!  
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- ❑ **16. COMPOSITIONS AND METHODS FOR AFFECTING OSTEOGENESIS**  
**UNDERHILL, Michael, T. / SAMPAIO, Arthur, V. / WESTON, Andrea, D. / THE UNIVERSITY OF WESTERN ONTARIO, PATENT COOPERATION TREATY APPLICATION,**  
 Sep 2001  
 ...activity. Thus compositions may include any **RAR antagonist** or agent having **RAR antagonist** activity. As such, the compositions may...composition comprising an effective amount of an **RAR antagonist** and, optionally, a pharmaceutically acceptable...  
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- ❑ **17. Synergistic Teratogenic Effects Induced by Retinoids in Mice by Coadministration of a RAR $\alpha$ - or RAR $\gamma$ -Selective Agonist...**  
**Elmazar, M.M.A. / Ruhl, R. / Nau, H., Toxicology and Applied Pharmacology,** Jan 2001  
 ...function in vertebrate limb skeletogenesis: a modulator of **chondrogenesis** J. Cell Biol. 136 1997 445 457 9 Chambon P. A decade of...mice is potentiated by an RXR agonist and reduced by an **RAR antagonist**: Dissection of retinoid receptor-induced pathways Toxicol...  
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- ❑ **18. Retinoic Acid Is a Potent Regulator of Growth Plate Chondrogenesis -- De Luca et al. 141 (1): 346 -- Endocrinology [29K]**  
 Oct 2004  
 ...Regulator of Growth Plate **Chondrogenesis** Francesco De Luca Jennifer...RA regulates growth plate **chondrogenesis**. Consistent with this hypothesis...retinoic acid receptor (**RAR**) **antagonist**. In the absence of exogenous...negatively regulates growth plate **chondrogenesis**. We conclude that RA, acting...  
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**Carl Zeiss**, Dec 2004  
 Tissue-remodeling processes are largely mediated by members of the matrix metalloproteinase (MMP) family of endopeptidases whose expression is strictly controlled both spatially and temporally.  
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 ...transgenic animals interferes with **chondrogenesis** and leads to appendicular skeletal...cartilage formation. Moreover, an **RAR antagonist** accelerates chondroblast differentiation...progenitors. Key Words : retinoic acid, **chondrogenesis**, bone morphogenetic proteins, limb...  
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## joint

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### Synarthroses ● Cartilaginous joints

These joints, also called synchondroses, are really the unossified masses found between bones or parts of bones that pass through a cartilaginous stage before ossification. Examples are the synchondroses between the occipital and sphenoid bones and the sphenoid and ethmoid bones of the floor of the skull. As already stated, these permit growth of the adjacent bones and act as virtual hinges at which the ethmoid and occipital bones swing upward upon the sphenoid; this allows backward growth of the nose and jaws during postnatal life. The juxta-epiphyseal plates separating the ossifying parts of a bone are also an example. Growth of the whole bone takes place at these plates when they appear, usually after birth. All synchondroses are transient; and they normally have vanished by the age of 25.

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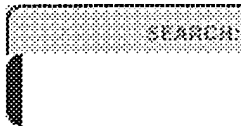
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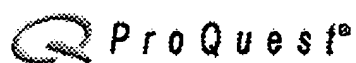
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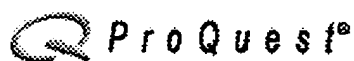
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EXEMPLARY CLAIM: 1  
NUMBER OF DRAWINGS: 10 Drawing Page(s)  
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CAS INDEXING IS AVAILABLE FOR THIS PATENT.  
AB The invention relates to methods and compositions for inducing or enhancing **chondrogenesis** in vivo and/or ex vivo. More specifically, the invention is directed to the use of RAR pan-antagonist compositions for the treatment, repair and engineering of cartilage.

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L2 ANSWER 2 OF 3 USPATFULL on STN  
ACCESSION NUMBER: 2003:181419 USPATFULL  
TITLE: Compositions and methods for affecting osteogenesis  
INVENTOR(S): Underhill, T. Michael, Ontario, CANADA  
Sampaio, Arthur V., Ontario, CANADA  
Weston, Andrea D., Ontario, CANADA

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AB The invention relates to compositions for promoting and inhibiting osteogenesis and to methods for treating bone abnormalities resulting from injury, toxicity or disease and for ex vivo bone tissue engineering.

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FORDERUNG DER **CHONDROGENESE**  
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